

Status of the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

Claims 1-49 (Cancelled)

50. (New) A charge pump, comprising:

first and second parallel current paths coupled at first ends to a first current source and coupled at second ends to a second current source, the first and second current paths having respective first and second output nodes; and

a system that controls a value of the second current source to correct for a voltage difference between the output nodes of the two parallel current paths, the system comprising,

a capacitor coupled to the second output node,

a filter coupled to the first output node, and

a feedback means having a first input coupled to the filter, a second input coupled to the capacitor, and an output coupled to one of the first and second current sources.

51. (New) The charge pump of claim 50, wherein the charge pump is implemented using CMOS technology.

52. (New) The charge pump of claim 50, wherein the feedback means is coupled to one of the first and second current sources via an adjusting current source.

53. (New) The charge pump of claim 52, wherein the adjusting current source is coupled between the feedback means and one of the first and second current sources.

54. (New) The charge pump of claim 50, wherein the feedback means is coupled directly to one of the first and second current sources.

55. (New) The charge pump of claim 50, wherein the filter is an analog loop filter.

56. (New) The charge pump of claim 50, wherein the filter comprises:
a resistor;
a first capacitor coupled in series with the resistor; and
a second capacitor coupled in parallel with the resistor and the first capacitor,

wherein an input to the feedback means is coupled to a node between the resistor and the first capacitor.

57. (New) The charge pump of claim 56, wherein:
the feedback means is an amplifier;
the capacitor in the system is coupled between a reference potential and another input of the amplifier, such that the inputs of the amplifier are in static balance with respect to one another.

58. (New) The charge pump of claim 50, wherein the feedback means is an amplifier.

59. (New) The charge pump of claim 50, wherein the first current path comprises:

a first switching device; and
a second switching device,
wherein the first output node is located between the first and second switching devices.

60. (New) The charge pump of claim 59, wherein the first and second switching devices are transistors.

61. (New) The charge pump of claim 50, wherein the second current path comprises:

a first switching device; and

a second switching device,

wherein the second output node is located between the first and second switching devices.

62. (New) The charge pump of claim 61, wherein the first and second switching devices are transistors.

63. (New) A method of controlling a charge pump, comprising:

receiving a pump-up and a pump-down signal;

transmitting the pump-up and the pump-down signals through first and second parallel current paths that are coupled between first and second current sources;

outputting a first current path output signal from the first current path to a filter, the filter producing a filter output signal;

outputting a second current path output signal from the second current path to a capacitor;

receiving the filter output signal and the second current path output signal at inputs of a feedback means;

generating a feedback output signal from the received signals; and

controlling a value of one of the first current source and the second current source using the feedback output signal to correct for the voltage difference to minimize D.C. offsets resulting from parasitic capacitances of the transistors.

64. (New) The method of claim 63, further comprising using CMOS technology to implement the charge pump.

65. (New) The method of claim 63, further comprising receiving the feedback output signal at an adjusting current source, which uses the feedback output signal to generate a current that is used to control one of the first and second current sources.

66. (New) The method of claim 63, further comprising balancing inputs of the feedback means through correlating a parameter of the capacitor with a parameter of the feedback means.

67. (New) The method of claim 63, comprising using an amplifier as the feedback means.